## AMENDMENTS TO THE SPECIFICATION

Please amend paragraphs 6, 33, 38, 53, and 57 as follows:

**[0006]** The invention consists of two primary components, an image thresholding subsystem and a gap filling subsystem. The image thresholding system can transform an ambient image into a binary image. Each pixel relating to the occupant can be set at one binary value and every pixel not clearly relating to the occupant can be set at a different binary value. An image threshold using a characteristic such as luminosity can be used to determine the binary value at which a particular pixel should be set. Different regions of the ambient image can utilize different image thresholds to account for differences in lighting caused by shadows, differing distances to light sources, or other causes. The image threshold can incorporate probability analysis into the segmentation process using a cumulative distribution function. As a general matter, the image thresholding subsystem can take a "cynical" view with respect to whether a particular pixel represents the image of the occupant. The image thresholding subsystem can attempt to determine ~~determines~~ which pixels clearly represent the image of the occupant, and can treat "gray area" pixels as representing aspects of the ambient image that are not the occupant. It is not a hindrance to the invention for the image threshold to classify the majority of the ambient image as not relating to the occupant image.

**[0033]** The image threshold(s) 44 used by the system 16 should incorporate the concept of selecting a top percentile of pixels 40 as representing the segmented image 31 on the basis of pixel characteristics 42, such as luminosity, and the corresponding pixel values relating to that characteristic. A pixel characteristic 42 such as luminosity can be represented by a value Y, such as 255, and should not be a percentile or probability such as 10% or N%. A cumulative distribution function can be used to convert a pixel value or characteristic such as Y into a probability or percentile such as N, or a ~~probably~~ probability or percentile using N into a measured characteristic 42 value such as Y.

**[0038]** Morphological processing can incorporate into a particular pixel value, the pixel values of other pixels 40 in the vicinity ("vicinity pixels" or "vicinity pixel values") of the particular pixel being analyzed or set. Morphological erosion can remove spurious objects, e.g., untrue indications that a pixel 40 represents the segmented image 31. Morphological erosion can be

performed in more than one direction. For example, erosion can be performed in a vertical direction, in a horizontal direction, or even in a diagonal direction. Morphological dilation can be performed to "grow out" the segmented image 31 reduced by the "conservative" image thresholding process. Morphological dilation can also be performed in many different directions. Illustrated in Figures 6a and 6b are examples of morphological processing performed in the vertical and horizontal directions.

**[0053]** An example of the momentum-based processing and the counter can be seen with respect to the pixel values in Table 1 below. For the purpose of distinguishing pixel positions from pixel values, letters are used in the example to represent the relative horizontal positions of the pixels. In many embodiments, a numerical coordinate position is used to identify the location of a pixel, and thus the position of a pixel would be identified by a numerical value. In the example, each occupant pixel 40 increments the counter by 1 and each ambient pixel 40 decrements the counter by 1. **Table 1:**

| Position | A | B | C | D | E | F | G | H | I | J | K | L | M | N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Value | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |

The three 1's at positions G, H, and I represent the largest region of 1's in the row, so momentum-based processing in a leftward direction will begin ~~a~~ at position I. I, H, and G each have pixel values of "1" so each of those pixels increments the counter by 1. Thus, the counter value at position G is 3. F has a pixel value of 0, but the counter has a value greater than 0 so the pixel value at F is changed to a 1 and the counter is decreased by 1 to a value of 2. E has a pixel value of 0, but the counter has a value of 2 which is greater than 0, so the counter goes down to a value of 1 and the pixel value at E is changed to 1. D has a pixel value of 1, so the counter is incremented to a value of 2. C has a pixel value of 0, but the counter value of 2 is greater than 0, so the pixel value at C is changed to a 1 and the counter has a value of 1. B also has a pixel value of 0, but the counter value of 1 is greater than 0, so B is changed to a value of 1 and the counter is changed to a value of 0. A has a pixel value of 0, and the counter value is 0, so there is no momentum to traverse the 0 value of A. Thus the right to left horizontal process stops.

**[0057]** Gravity-based processing and the gravity-based heuristic incorporates the assumption that ~~that~~ ambient pixels 40 in the general vicinity of the ~~a~~ pixel region 66 of occupant pixels 40 (a

group of occupant pixels where each occupant pixel is adjacent to at least one other occupant pixel) may actually be misidentified occupant pixels 40. The system 16 can incorporate a heuristic resembling the manner in which physics measures the impact of gravity on an object. The size of the pixel region 66 and the distance between the pixel region 66 and the potentially misidentified ambient pixel 40 are two potentially important variables for gravity-based processing. The "gravity" of a particular pixel region 66 can be compared to a predetermined threshold to determine whether or not an occupant pixel 40 has been misidentified as an ambient pixel 40.

$$\text{Gravity} = \frac{GMm}{r^2} > \text{pre-computed threshold}$$

In the equation above "G" is the "gravitational constant." It determines the strength with which pixels are attracted together. This parameter or characteristic is determined by the imagery and target types being analyzed to determine the amount of attraction needed to accomplish a complete segmentation. Different embodiments will have different "G" values. "M" can represent the aggregate total of the initial pixel value 56 for a characteristic 42, such as a luminosity value between 0 and 255 for each occupant pixel 40 in the pixel region 66. The small case "m" represents the initial pixel characteristic 42 of the potentially misidentified ambient pixel 40 being considered for re-characterization the system's 16 gravity-based processing. The variable "r" represents the "radius" or the number of pixels between the pixel region 66 and the ambient pixel 40 being considered for re-classification as an occupant pixel 40.